

COMPOSITE SAMPLES

SW

- 1 C-3 A shallow "pond" located on top of the old landfill (C-3-1A to C-3-1D) = 4 1-L samples
- 1 C-7 Control samples from Tanner Brook near East Valley Brook Road (C-7-1A to D) = 4 1-L
- 1 C-8 Two stations in a liquid seep producing brownish water and gas on the west side of the landfill (C-8-4 and ERT 15)
A+B A+B = 4 1-L
- 2 C-9 Two stations in the East Branch of Trout Brook between its origin and Parker Road (C-9-3 and C-9-5)
2 1-L 4 1-L
- 2 C-10 Beams's Pond, downstream of the site on the West Branch of Trout Brook (C-10-9) and the West Branch of Trout Brook near its origin at the landfill (C-10-7) = 2 1-L C-10-9 = Beam's Pond per se
West 4 1-L
- 3 C-11 East Branch of Trout Brook at Parker Road (C-11-1), Trout Brook at State Park Road (C-11-3), and Trout Brook in Hacklebarney State Park (C-11-4) Each = 4 1-L No standing water at East (C-11-2).

The nine sediment samples were collected from four sample transects at the following locations:

- 1 ~~Sed~~ SED. C-3 A shallow "pond" located on top of the old landfill (C-3-1 to C-3-9) = 9 2kg samples
- 2 C-9 Same as C-9 water stations 1 2kg sample, each
- 2 C-10 Same as C-10 water stations #9 = 2 2kg, #7 = 1 2kg sample.
- 4 C-11 Same as C-11 water stations plus the East Branch of Trout Brook at Parker Road (C-11-2) 2 2kg, each

Three of the ten surface water composites were considered toxic because they exhibited EC₅₀ values of less than twenty percent. That is, less than a twenty percent concentration of the water sample produced a response in fifty percent of the test organisms. For Daphnia, the response is immobilization, for freshwater algae it is growth inhibition. The Daphnia bioassays are run for forty-eight hours, the freshwater algae for ninety-six.

One of the three toxic samples, the C-8 water composite taken from an active seep on the southwest bank of the landfill, was highly toxic to both algae and Daphnia, with EC₅₀ values of 3.2 and 6.5 percent, respectively. Two other stations tested were considered toxic to the test organisms.

Two of the nine sediment elutriate composites showed toxicity. The C-3-1 sample, from the shallow "pond" on top of the landfill, was toxic

* West Branch = C-11-1, ~~East Branch = C-11-2~~

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to Daphnia. The C-10-9 sediment elutriate composite, from Beam's Pond, was toxic to freshwater algae. The other sediment elutriates were not toxic to either algae or Daphnia.

The preliminary results indicate that some seeps and adjacent sediments are toxic to algae and Daphnia. Both of these test organisms are sensitive to water-soluble contaminants. The areal extent and potential impact of the seeps of the off-site receiving streams and wetlands cannot yet be determined. When results from the soil elutriate bioassays, the chemical analysis, and bioassay results on additional test species become available, more definitive conclusions can be derived. These results are expected from the EPA ERL by the end of March.

The final results of the bioassessments conducted by EPA-Corvallis will be correlated with the 1983 Macroinvertebrate Survey done by the New Jersey Department of Environmental Protection to better define the biological impact of the landfill on Trout Brook. The New Jersey study indicated that nearly one mile of the West Branch of Trout Brook is grossly polluted from landfill contaminants. None of the macroinvertebrates classified as intolerant to organic pollution are present, including those essential to supporting a viable trout population.

The bioassessment work conducted by EPA and the State of New Jersey at the Combe Fill South Landfill should provide useful input to the remedial prioritization process, the extent of cleanup required, and the selection of the cleanup technique. At a site such as this, where ppb levels of a mixture of organic chemicals are migrating off-site to surface waters, bioassessment can provide a better understanding of the extent of the problem. By supplementing chemical characterization with bioassay results real impacts can be scientifically measured instead of merely attempting to interpret what a complex mixture of eight or ten organic chemicals will do to a unique ecosystem. *predict*

Use of bioassay results in the remedial decision-making process, particularly when determining extent of cleanup, can indicate the "ecological risk" at each individual site, depending on the types of chemicals present, their availability, what organisms are present, the exposure routes, and the length of exposure.

Another report will be issued once the final bioassay results are received. Meanwhile, if you have any questions, please contact me at FTS 340-6748 or (201) 321-6748.

Attachments

- ① are finalized QA/QC'd data available now?
- ② Has correlation been done w/ 1983 DEP data?
- ~~③ Sample location maps — OK w/ this pkg.~~
- ~~④ # SW samples at C-11: 2, or 3?~~